

Appl. No. 09/109,343  
Amdt. dated January 23, 2004  
Reply to Office Action of September 24, 2003

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (previously presented):

A router for routing a packet belonging to a virtual private network (VPN) and having a label that includes a virtual private network identifier (VPN-ID) according to the Multiprotocol Label Switching (MPLS) standard, the router comprising:

- a) a first table associated with the VPN, from among one or more separate tables, each table associated with a different VPN; and
- b) a processor for routing the packet based on an association between the VPN-ID and the first table.

2. (original):

The router as recited by claim 1 wherein in the table is a route table.

3. (original):

The router as recited by claim 1 wherein the table is a forwarding table.

4. (cancelled)

5. (previously presented):

The router as recited by claim 1 further having a port for transmitting said packet.

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6. (cancelled)

7. (previously presented):

The router as recited by claim 1 wherein the label further includes a forwarding label.

8. (previously presented):

A method of routing a packet in a network, the packet belonging to a virtual private network (VPN) and having a label that includes a virtual private network identifier (VPN-ID) according to the Multiprotocol Label Switching (MPLS) standard, the method comprising:

- a) maintaining a first table corresponding to a first virtual private network;
- b) maintaining a second table corresponding to a second virtual private network;
- and
- c) routing the packet based on an association between the VPN-ID and one of the first table and the second table.

9. (original):

The method as recited by claim 8 wherein the first table and the second table are route tables.

10. (previously presented):

The method as recited by claim 8 wherein the first table and the second table are forwarding tables.

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11. (previously presented):

The method as recited by claim 8 further comprising maintaining a forwarding table indexable by the VPN-ID.

12.-13. (cancelled)

14. (previously presented):

The method as recited by claim 8 wherein the label further includes a forwarding label.

15. (cancelled)

16. (previously presented):

A method of routing a packet in a network, the packet belonging to a virtual private network (VPN) and having a label that includes a virtual private network identifier (VPN-ID) according to the Multiprotocol Label Switching (MPLS) standard, the method comprising:

- a) maintaining a first forwarding table corresponding to a first virtual private network;
- b) maintaining a second forwarding table corresponding to a second virtual private network; and
- c) routing the packet based on an association between the VPN-ID and one of the first forwarding table and the second forwarding table.

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17.-18. (cancelled)

19. (previously presented):

The method as recited by claim 16 wherein the label further includes a forwarding label.

20. (cancelled)

21. (previously presented):

A network comprising:

- a) a first edge router configured to route a packet through a wide area network cloud, the packet belonging to a virtual private network (VPN) and having a label that includes a virtual private network identifier (VPN-ID) according to the Multiprotocol Label Switching (MPLS) standard;
- b) a backbone router configured to receive the packet and route the packet based on a route table associated solely with the VPN-ID, from among one or more separate route tables, each table associated with a different VPN; and
- c) a second edge router configured to receive the packet.

22. (cancelled)

23. (previously presented):

The network as recited by claim 21 wherein the label further includes a forwarding label.

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24. (original):

The network as recited by claim 21 wherein the backbone router comprises a second route table.

25. (previously presented):

The network as recited by claim 21 wherein the packet further includes, a second label identifying forwarding table corresponding to the virtual private network, the forwarding table including a portion of the route table.

26. (previously presented):

A method of routing a packet belonging to a virtual private network (VPN) and having a label that includes a virtual private network identifier (VPN-ID) according to the Multiprotocol Label Switching (MPLS) standard, the method comprising:

- a) receiving the packet;
- b) identifying a routing table associated with the VPN from among multiple separate routing tables associated with different VPNs; and
- c) facilitating routing of the packet to the VPN.

27. (previously presented):

The method of claim 26, wherein the VPN-ID is contained in a first label in the header.

28. (previously added):

The method of claim 26, wherein the routing of the packet is based on information in the header.

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29. (previously added):

The method of claim 27 further comprising:

identifying, from a second label, a forwarding table corresponding to the VPN,  
the forwarding table including a portion of the routing table.

30. (previously added):

The method of claim 29 further comprising:

identifying, from the forwarding table, label switching information for routing the  
packet to the VPN.

31. (previously added):

The method of claim 30, wherein routing of the packet is based on information in the  
forwarding table.

32. (previously added):

The method of claim 26 wherein the label includes a forwarding label corresponding to a  
forwarding table.